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Medicinal Properties of Fungi with Special of Mould, Yeast and Mushrooms

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Abstract: ***In the biological world, fungi perform a crucial function. Their three varieties— yeasts, molds, and mushrooms—are crucial in the production of several foods (including cheese, bread, and alcoholic beverages), as well as antibiotics and anti-fungal medications. Additionally, they boost immunity and are good sources of protein (mushrooms). On the other hand, fungi ruin crops and food supplies and are also to blame for significant human, animal, and plant diseases.***
Essential Words: Fungi, Medicines, Food, Cultivation

I. INTRODUCTION

In essence, fungi are plants without the green pigment chlorophyll. Now that this idea has been significantly modified, fungi are classified as a separate kingdom like plants and animals. Fungi are the subject of mycology. Fungi and specific bacteria work together to recycle, or change dead material into a formthat is helpful to the earth. By creating mycorrhizal associations, fungi are crucial for the growth of most plants, including crops, but they also cause diseases in humans, animals, and other plant and animal life. Humans eat edible mushrooms because they have one nutritional benefit. [1] There are thought to be 140 000 different species of mushrooms on the planet, just 10%of which are known. Of the roughly 14,000 species that we are now aware of, over 50% are thought to have varied degrees of edibility, more than 2,000 aredeemed safe, and about 700 species are thought to have substantial pharmacological capabilities.[2,3,4,5]. There are three different types of fungus: yeasts, mold and mushrooms. Yeast is composed of individual cells, and grows by budding examples; Candida albican, Cryptococcus, Histoplasma and Saccharomyces etc. Candida albicans is oval yeast with a single bud (Figure 1). Four large varieties of unicellular fungi are referred to in the word'yeasty'.[1,7,8].

A. Types of Fungi

1) Yeast



(Fig no 1)

Incentive like Saccharomyces cerevisiae and are exercised for chuck baking(the other) and for alcohol product(the latterly). The cytoplasm of Saccharomyces is rich in B vitamins, a procurator that makes incentive tablets precious nutritive accruals. One pharmaceutical company adds iron to the incentive and markets its product as " Ironized incentive." passed for people with iron-penurious raise barley granules, the productis called beer; if grape juice is fermented, the product is wine. [1,8]

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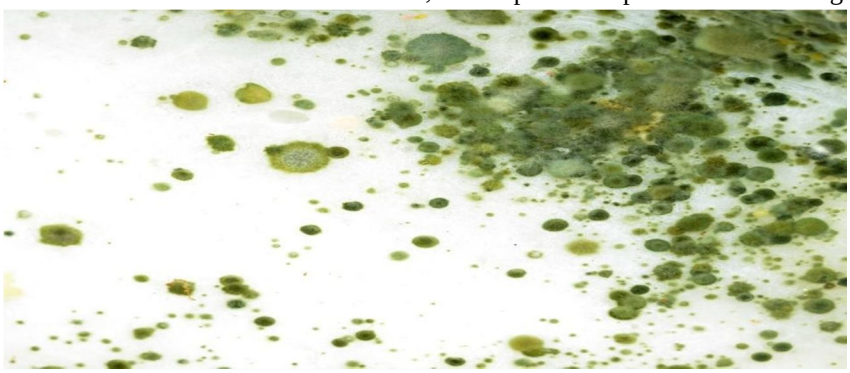
2) Molds

Molds are microscopic fungi that live in plant or animal matter. They are found both indoors and outdoors and are part of our natural environment.They play an important role in the environment in breaking down and digesting organic material. Molds, also called fungi or moulds, are neither plants nor animals; they are part of the mushroom kingdom.

Molds can reproduce by producing microscopic spores that are similar to seeds produced by plants. Many spores are so small that they easily float inthe air and can be carried long distances by even the mildest of winds.

Forms are available in several colors, including white. "Black mold" is not aspecies or specific type of mold, nor is it "toxic mold." The media sometimes use the terms "toxic mold" and "black mold" to refer to molds that can produce mycotoxins or to the specific mold Stachybotrys chartarum. Molds that produce mycotoxins are often called toadstools.

Mold is not usually a problem indoors - unless the mold spores get into a wet or damp place and start growing. When molds grow, they digest everything where they grow. Uncontrolled mold growth can damage buildings and furniture; molds can rot wood, damage drywall, and ultimately cause structural damage to buildings. Mold can cause cosmetic damage to furniture, such as stains. The potential health effects of mold are also a concern. Therefore, it is important to prevent mold from growingindoors.[9]



(Fig no 2)

3) Mushrooms

Mushroms are fleshy, spore-bearing fruits Mushroom bodies that are usually produced above ground with soil or its nutrient source (organic humus), like everything Mushrooms, fungi are not plants and they do not pass photosynthesis A mushroom has a stem (type), a cap (pileus) and gills (lamellas, sing. lamellae) or pores under the cap and that underground parts. In most such cases spores are attached to gills or aminae. The spores are responsible for reproduction and no like plant seeds. The body of the mushroom is consists of a single thread-like structure called Mycelium[6]. Medicinal mushrooms have an established history used in traditional oriental treatments. Historically, hot water soluble fractions (decoctions and essences) were created. medicinal mushrooms have been used asmedicines in the distant past The East, where the knowledge and practice of usingmushrooms mainly originates. Mushrooms such as Ganoderma lucidum (Reishi), Lentinus edodes (Shiitake), Inonotus obliquus (Chaga) and many others were collected and has been used for hundreds of years in Korea, China, Japan, and in eastern Russia[10,11,12].



(Fig no 3)

B. Types of Mushroom

1) Edible Mushrooms

Edible mushrooms are the fleshy edible fruiting bodies of several species of macrofungi (fungi that carry fruit structures visible to the naked eye). Edibility can be determined based on criteria such as lack of human toxicity and desired taste and smell. Edible mushrooms are consumed for their nutritional and culinary value. Mushrooms, especially dried shiitake, are the source of umami flavor.To ensure safety, wild mushrooms must be correctly identified before theycan be assumed to be edible. Deadly poisonous mushrooms, often confused withedible mushrooms, include several species of the genus Amanita, especially Amanita phalloides, the law of death. Some mushrooms that are edible for most people can cause allergic reactions in others; old or improperly stored samples can go rancid and cause food poisoning. In addition, other edible mushrooms can absorb chemicals in polluted areas and accumulate pollutants and heavy metals, including arsenic and iron – sometimes in lethal concentrations.[13] [Table no.1]



(Fig no 4)

2) Subtypes

a) Button Mushroom.

Agaricus bisporus, commonly known as the cultivated mushroom, is an edible basidiomycete native to the grasslands of Eurasia and North America. It has two immature color states - white and brown - both of which have different names, and the mature state has additional names.A. bisporus is cultivated in more than 70 countries and is one of the most common and widely consumed mushrooms inthe world.[14].



Fig no 5

b) Chantarelle (Girolle)

Boletus is a wild mushroom that cannot be cultivated. It grows in deciduous and coniferous forests and in acidic soil with a low humus content. Today, chanterellesare hard to find in the Netherlands, unlike in Eastern Europe, where they are still abundant. The chanterelle season in Eastern Europe lasts from May to October. InNovember, December and January, chanterelles are harvested in Canada and in January and March they are found in portogal.

3) Description

The mushroom has a funnel-shaped cap into which the stem merges. The color varies from light yellow to dark yellow. The diameter of the mushroom cap is about 3-10 cm.

4) Storage and Conservation

Do not store chanterelles for too long. They are best used on the day of purchase. Chanterelle mushrooms should be kept dry in the refrigerator, where they will last 5-7 days.

5) Season and use

Chanterelles have a herbaceous and slightly peppery flavor, making them idealfor sauces. They are also perfect for meat dishes, especially game.[16]



Fig no 6

Sr.No.	Botanical name	Commonname	Geography	Uses	Reference
1	Agaricus bisporus	Button Mushroom	Europe and America	Antitumor,Antioxidant,Antiviral,Antibacterial Anti- aromatase,Proapoptotic properties.	26
2	Auricularia polytricha	Cloud ear fungus/Jew's ear mushroom	India and China	Antitumor,and anti-hypercholestrolemic	27,28
3	Auricularia auricula -judae	Jew'seear,(black) wood ear, jelly ears	China and Australia	Anti-oxidant,Antitumor,Anticoagulant and Immunomodulatory	29,30
4	Cantharellus cibarius	Girolle	France,Britain and India	Hepatoprotective,Antimicrobial, Antioxidant,Antihypersensitive	31,32

II. MEDICINAL MUSHROOMS

These are extracts of some mushrooms that are used or studied as potential treatments for diseases. Research on medicinal mushrooms has shown potential cardiovascular, anticancer, antiviral, antibacterial, antiparasitic, anti- inflammatory, Liver protective and antidiabetic effect. These extracts are widely used in Japan, Korea and China as adjuvants in chemotherapy. Polysaccharides - protein complexes of drugs mushrooms can strengthen the natural immune system responses resulting in antitumor activity in animals and people. Mushroom extracts have shown potential in vitro lowers levels of estrogen and testosterone production of hormones by inhibiting aromatase and 5-alpha- reductase enzymes. Some mushrooms also have anti-inflammatory effects. Some mushrooms that contain ergosterol, if People exposed to UV radiation produce significant amounts of vitamin D2.[17,18,19,20,21,22,23,24,25]

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A. Cultivation

Mushrooms grown for commercial purposes

Agarcomycetes fungus Agrocybe aegerita is one of the most widely used mushroom varieties that is commercially grown for use in food. An important factor that makes A. aegerita a suitable type for studying the developmental biology of mushrooms is its ease of cultivation in a solidified medium. Pleurotus pulmonarius and Pleurotus sajor-caju were grown based on the differences seen in conventional mating experiments. Northern Serbian mushroom cultivars Agaricus bisporus (AbHW) and Ganoderma resinaceum (GrHW) have therapeutic properties such as peroxidation, anticancer, and antiproliferative action. The efficiency of the chosen mushrooms in biological processes directs their usage asfunctional foods.[33,34,35]

Commercially grown mushrooms have some advantages over other varieties, including the ability to produce the fruiting body in less time, produce myceliumquickly in liquid culture, and adjust the culture medium to produce the right amount of antioxidant and antitumoral compounds. However, postharvest preservation methods are proven to have an impact on the nutritional value and bioactive properties of certain mushroom varieties.[36]

The fungal species known as "wild mushrooms" are those that grow consistently in untamed landscapes and under harsh climatic circumstances. Wild edible species are increasingly widely grown due to their safe and nutritious qualities, especially once their nutritional qualities have been found and documented. For instance, the Cantharellus cibarius wild edible mushroom, which is primarily found in Antalya (Turkey), is renowned for its strong total antioxidant status (TAS), total oxidant status (TOS), and oxidative stress index (OSI), which are measured by the DPPH scavenging activity. One of the most popular wild mushrooms is called Termitomyces heimii, which is grown in sub-Saharan Africa and has therapeutic qualities that are comparable to those of meat and fish. This fresh mushroom's flour was found to include a high amount of proteins, lipids, moisture, ash, and carbohydrates. T. heimii was recommended for eating because of its high protein and low fat content (3.58%), as well as its favorable foaming qualities and other crucial functional qualities, which make it an ideal ingredient in the food industry[37,38,39]

As consumer demand for these natural edible mushrooms has recently increased,these wild mushroom varieties are cultivated under their natural conditions with the help of local communities. Thus, this approach provides livelihoods for local communities and satisfies the general demand for wild edible mushrooms. In addition, to improve the commercial coverage of wild edible mushrooms, detailed studies on the toxicity and nutritional factors of wild mushrooms should be conducted to establish a complete database of the nutritional value of these wild edible mushrooms [40]

III. CONCULSION

Not only are mushrooms highly nutritious, but a number of species have been identified as sources of bioactive chemicals. Whole mushrooms have the potential to be effective dietary supplements if they are incorporated into the diet.The cultivation of mushrooms and the subsequent extraction of their bioactive metabolites are essential components in the creation of effective biotechnological processes that provide these metabolites. Numerous studies have demonstrated that some components found in mushrooms have exceptional potential for the prevention or treatment of several ailments.

Certain species' powder formulations have shown the existence of vital nutrients. Like mushroom fruiting bodies, they have a low fat content and can be included in low-calorie diets. Certain combinations may be utilized as antioxidants to stop oxidative

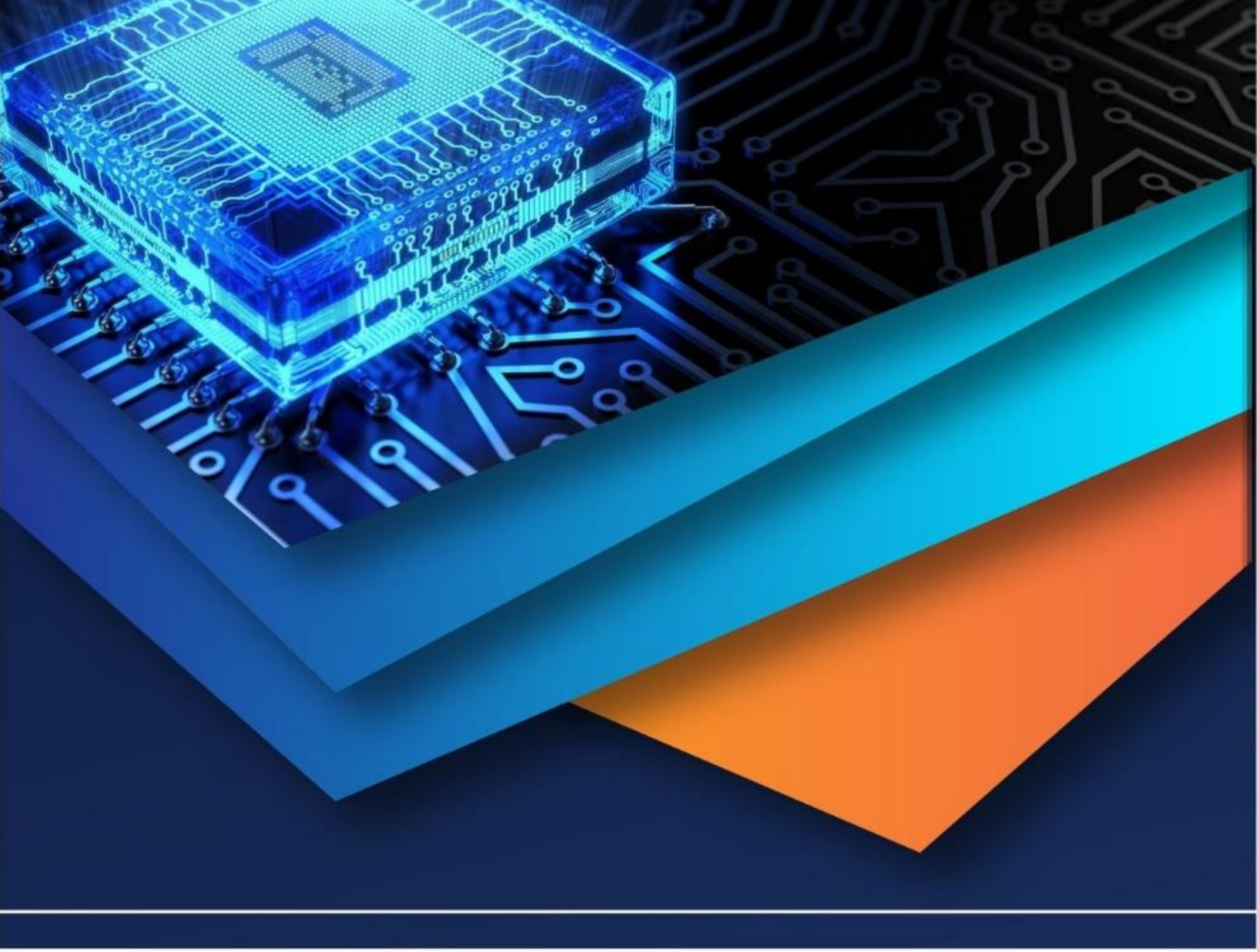
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